

SECTION IV.—RIVERS AND FLOODS.

RIVERS AND FLOODS, JUNE, 1918.

By ALFRED J. HENRY, Meteorologist in Charge.

[Dated: River and Flood Division, July 30, 1918.]

June rains, as a rule, were not sufficient in quantity nor general enough in distribution to produce serious floods in the larger streams of the United States, except in the Des Moines River of Iowa and in the Mississippi in the stretch from Keokuk, Iowa, to Louisiana, Mo.

The flooding in this stretch was due to heavy rains during the latter part of May and again on June 4-5 throughout central Iowa, especially in the watershed of the Boone—a tributary of the Des Moines River—where the total 24-hour fall on the morning of the 4th was close to 5 inches. Flood stages were reached at Boone, Iowa, on the 4th, and at Ottumwa on the 7th; and this rise out of the Des Moines caused flood stages to be reached in the Mississippi at Keokuk, Iowa, and Warsaw, Ill., on the 12th. Other Iowa rivers also reached high stages as a result of very general and almost continuous showers during the periods designated above.

The Mississippi immediately south of Keokuk began to overflow the unprotected lands on the 9th, and these lands at the highest stage were covered to a depth of about 2 feet. Lands protected by small levees were not overflowed. The official in charge at Keokuk, Iowa, Mr. F. Z. Gosewisch, estimates that between 5,000 and 6,000 acres, mostly planted to corn, were overflowed. Eight hundred acres planted to tomatoes by a local canning company were also overflowed.

The loss in the Keokuk district was confined to seed and the labor of replanting.

In the Hannibal district, from Warsaw, Ill., to Louisiana, Mo., the Mississippi was in flood from the 10th to the 17th, except at Hannibal, where flood stages continued from the 8th to the 20th, with a crest stage of 17.8 feet on the 13th (flood stage 13 feet). In this district the breaking of a levee on June 13 was the cause of a loss to the levee and pumping station of approximately \$90,000.

The Mississippi reached bank-full stages between Louisiana, Mo., and Grafton, Ill., and the flood ended in that stretch of the river. There was practically no damage to corn in the St. Louis district.

Upper Mississippi—Dubuque district.—There was a sharp rise in the Mississippi in the Dubuque district, due to heavy rains on the watersheds of the Wisconsin, Black, and Chippewa Rivers; and while flood stage was not reached in the main stream, yet the overflow from the mouth of the Galena River to La Crosse, Wis., especially in the neighborhood of Cassville, Wis., and along Turkey River of Iowa, caused a loss of prospective crops on 5,000 acres, as estimated by Mr. J. H. Spencer, in charge of the Dubuque, Iowa, river district. Mr. Spencer states that hundreds of acres in the lowlands along the river had been planted to potatoes, other truck crops, and corn, and many other hundreds of acres had been prepared for late crops. All planting in the lowlands naturally ceased with the coming of the high water.

Some damage to growing crops along the south fork of the Solomon River in the neighborhood of Beloit, Kans., is reported.

Rivers of Central Rocky Mountain region.—Floods due to the melting of snow in the higher levels of Colorado

occurred in the second decade of the month and these tributary floods reached the lower Colorado at Topock, Ariz., on the 20th and Yuma, Ariz., on the 26th, both floods having been accurately announced by District Forecaster Brandenburg 9 and 12 days, respectively, in advance.

Flood in Columbia River.—The annual flood in the Columbia River due to melting snow was in progress in the lower reaches of the river as the month closed. Further report on this flood will be made in a subsequent number of this REVIEW.

Summary of lands overflowed.

District.	Acres overflowed.	Estimated loss.
MISSISSIPPI RIVER.		
Keokuk.....	5,500	Nominal.
Hannibal.....	8,500	Cost of seed and labor replanting.
Dubuque, Iowa.....	5,000	Do.
RIO GRANDE.		
Houston, Tex.*.....	?	Mostly cost of seed and labor of replanting.

* From May floods on lower Rio Grande not previously reported.

TABLE I.—Flood stages in the Mississippi River drainage during June, 1918.

River and station.	Flood stage.	Above flood stages—dates.		Crest.	
		From—	To—	Stage.	Date.
<i>Mississippi:</i>	<i>Feet.</i>			<i>Feet.</i>	
Keokuk, Iowa.....	14	10	15	16.8	12
Warsaw, Ill.....	17	10	15	19.5	12-13
Quincy, Ill.....	14	10	17	17.7	13
Hannibal, Mo.....	18	8	20	17.8	13
Louisiana, Mo.....	12	(†)	1	12.1	* 31
Do.....	12	10	19	15.3	14
Grafton, Ill.....	18			17.4	16-17
<i>Big Pigeon.</i>					
Newport, Tenn.....	6	21	21	8.0	21
<i>Holston (North Fork):</i>					
Mendota, Va.....	8	26	26	8.3	26
<i>Wisconsin:</i>					
Knowlton, Wis.....	12			11.2	2
Portage, Wis.....	11			10.2	2
<i>Des Moines:</i>					
Boone, Iowa.....	17	4	5	23.2	5
Des Moines, Iowa.....	17			16.5	7
Ottumwa, Iowa.....	10	7	13	14.0	10
		25	25	11.9	25
<i>Illinois:</i>					
Peru, Ill.....	14			13.2	2
Henry, Ill.....	7	(†)	5	7.5	2
Beardstown, Ill.....	12	(†)	3	12.6	1-2
Pearl, Ill.....	12			10.8	16
<i>St. Francis:</i>					
Marked Tree, Ark.....	17			16.6	1-10
<i>Missouri:</i>					
Brunswick, Mo.....	10	9	9	10.3	9
Running Water, S. Dak.....	16			14.7	25-27
Blair, Nebr.....	16			15.1	28-29
<i>Grand:</i>					
Chillicothe, Mo.....	18	(†)	2	21.2	1
<i>Solomon:</i>					
Beloit, Kans.....	16	1	4	26.5	3
<i>North Canadian:</i>					
Canton, Okla.....	3	1	2	3.6	1
<i>White:</i>					
Georgetown, Ark.....	22	(†)	3	28.3	* 20
Clarendon, Ark.....	30			29.9	1
<i>Black:</i>					
Black Rock, Ark.....	14	(†)	3	25.7	* 14
<i>Cache:</i>					
Jelks, Ark.....	9	(†)	4	9.8	* 24-25

† Continued from May.

* May.

TABLE II.—Flood stages in Colorado and West Gulf drainages during June, 1918.

River and station.	Flood stage.	Above flood stages—dates.		Crest.	
		From—	To—	Stage.	Date.
<i>Colorado:</i>	<i>Feet.</i>			<i>Feet.</i>	
Topock, Ariz.....	14	16	25	17.0	20
Yuma, Ariz.....	25			24.7	26
<i>Grand:</i>					
State Bridge, Colo.....	9	11	24	10.7	15
Grand Junction, Colo.....	11	11	17	11.9	15
<i>Roaring Fork:</i>					
Carbondale, Colo.....	6	9	18	7.5	13
Do.....		23	23	6.0	22-23
<i>Eagle:</i>					
Eagle, Colo.....	5	10	18	6.0	12-14
Do.....		21	25	5.2	22
<i>Gunnison:</i>					
Delta, Col.....	9			8.7	12-13
<i>Gunnison (North Fork):</i>					
Paonia, Colo.....	8	11	12	8.0	11-12
Do.....		14	14	8.0	14
<i>Green:</i>					
Green River, Wyo.....	9	10	29	12.5	20
Elgin, Utah.....	13	24	24	13.0	24
WEST GULF.					
<i>Rio Grande:</i>					
San Marcial, N. Mex.....	14			12.7	12
<i>Trinity:</i>					
Dallas, Tex.....	25	10	10	26.5	10

TABLE III.—Flood stages in Pacific drainage during June, 1918.

River and station.	Flood stage.	Above flood stages—dates.		Crest.	
		From—	To—	Stage.	Date.
<i>Kings:</i>	<i>Feet.</i>			<i>Feet.</i>	
Piedra, Cal.....	12	12	14	12.0	12-14
<i>Columbia:</i>					
Marcus, Wash.....	24	12	**	31.2	25-27
Wenatchee, Wash.....	40	23	28	40.5	24-27
Vancouver, Wash.....	15	12	**	20.1	26
<i>Pend d'Oreille:</i>					
Newport, Wash.....	16	18	28	17.0	21-23
<i>Kootenai:</i>					
Bonnars Ferry, Idaho.....	26	15	17	26.6	16
<i>Clearwater:</i>					
Kamiah, Idaho.....	14			13.3	10-11
<i>Willamette:</i>					
Portland, Oreg.....	15	12	**	19.2	25-27

** Continued into July.

MEAN LAKE LEVELS DURING JUNE, 1918.

By UNITED STATES LAKE SURVEY.

[Dated: Detroit, Mich., July 8, 1918.]

The following data are reported in the "Notice to Mariners" of the above date:

Data.	Lakes.*			
	Superior.	Michigan and Huron.	Erie.	Ontario.
Mean level during June, 1918:				
Above mean sea level at New York.....	<i>Feet.</i> 602.10	<i>Feet.</i> 581.97	<i>Feet.</i> 572.53	<i>Feet.</i> 247.01
Above or below—				
Mean stage of May, 1918.....	+0.36	+0.33	+0.33	—0.12
Mean stage of June, 1917.....	—0.41	+0.43	—1.00	+0.03
Average stage for June, last 10 years.....	—0.16	+1.19	—0.42	—0.02
Highest recorded June stage.....	—1.33	—1.63	—1.99	—1.62
Lowest recorded June stage.....	+0.86	+2.07	+0.96	+2.12
Average relation of the June level to—				
May level.....	+0.3	+0.3	+0.2	+0.2
July level.....	—0.2	+0.1	—0.1	+0.1

* Lake St. Clair's level: In June, 575.89 feet.